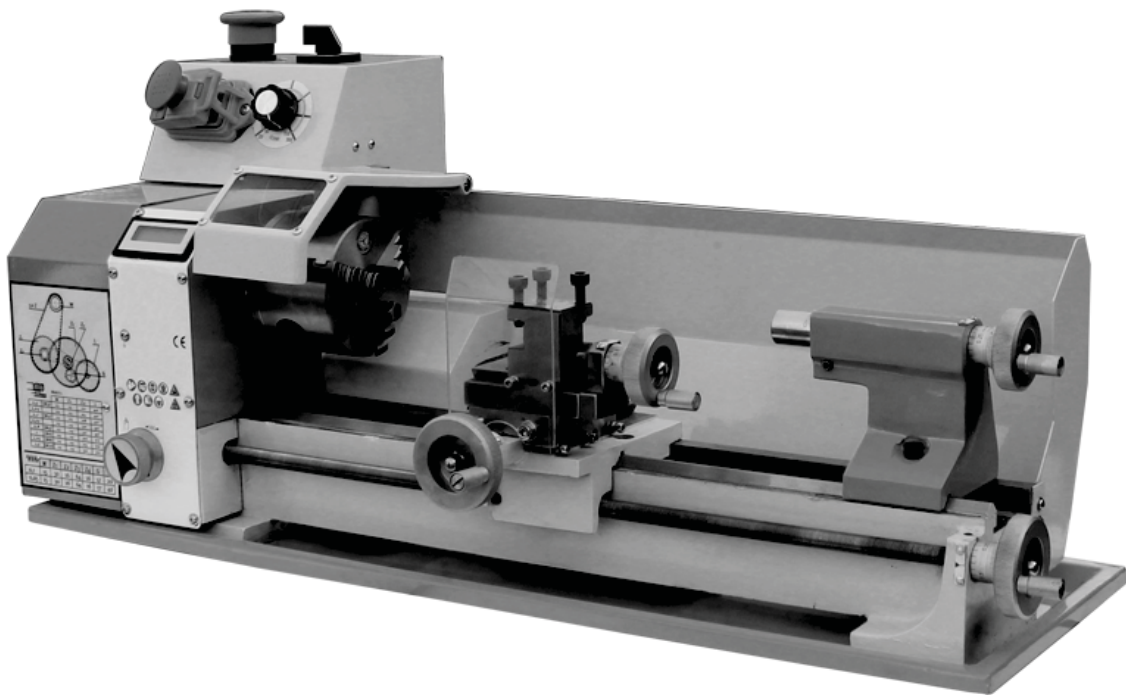


OPERATOR'S MANUAL

Hobby 300 DC



Keep read and understand the safety rulers and operation manual
before using this machine!



WARNING!

Read and understand the entire instruction manual before attempting set-up or operation of this machine!

1. **This machine is designed and intended for use by properly trained and experienced personnel only.** If you are not familiar with the proper safe use of lathes, do not use this machine until proper training and knowledge has been obtained.
2. **Keep guards in place.** Safety guards must be kept in place and in working order.
3. **Remove adjusting keys and wrenches.** Before turning on machine, check to see that any adjusting wrenches are removed from the tool.
4. **Reduce the risk of unintentional starting.** Make sure switch is in the OFF position before plugging in the tool.
5. **Do not force tool.** Always use a tool at the rate for which it was designed.
6. **Use the right tool.** Do not force a tool or attachment to do a job for which it was not designed.
7. **Maintain tools with care.** Keep tools sharp and clean for best and safest performance. Follow instructions for lubrication and changing accessories.
8. **Always disconnect the machine from the power source before adjusting or servicing.**
9. **Check for damaged parts.** Check for alignment of moving parts, breakage of parts, mounting, and any other condition that may affect the tools operation. A guard or any part that is damaged should be repaired or replaced.
10. **Turn power off. Never leave a machine unattended.** Do not leave a machine until it comes to a complete stop.
11. **Keep work area clean,** Cluttered areas and bench invite accidents.
12. **Do not use in a dangerous environment.** Do not use power tools in damp or wet locations, or expose them to rain. Keep work area well lighted.
13. **Keep children and visitors away.** All visitors should be kept a safe distance from the work area.
14. **Make the workshop child proof.** Use padlocks, master switches, and remove starter keys.
15. **Wear proper apparel.** Loose clothing, gloves, neckties, rings, bracelets, or other jewelry may get caught in moving parts. Non-slip footwear is recommended. Wear protective hair covering to contain long hair. Do not wear any type of glove.
16. **Always use safety glasses.** Every day glasses only have impact resistant lenses; they are not safety glasses.
17. **Do not overreach.** Keep proper footing and balance at all times.
18. **Don not put hands near the cutter while the machine is operating.**
19. **Do not perform any set-up work while machine is operating.**
20. **Read and understand all warnings posted on the machine.**
21. **This manual is intended to familiarize you with the technical aspects of this lathe.** It is not, nor was it intended to be a training manual.
22. **Failure to comply with all of these warnings may result in serious injury.**
23. **Some dust created** by power sanding, sawing, grinding, drilling and other construction activities contains chemicals known to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are lead from lead based paint; crystalline silica from bricks and cement and other masonry products.
24. **Your risk from those exposures** varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specifically designed to filter out microscopic particles.

SPECIFICATIONS

Capacities:	
Swing Over Bed	150mm
Swing Over Cross Slide	78mm
Distance Between Centers	300mm
Width of Bed	70mm
Headstock:	
Hole Through Spindle	11mm
Taper in Spindle Nose	MT1
Number of Spindle Speeds	Variable
Range of Spindle Speeds	160-3000rpm
Feeding and Threading:	
Number of Metric Threads	8
Range of Metric Threads	0.5-1.5mm
Number of Imperial Threads	–
Range of Imperial Threads	–
Range of Longitudinal Feed	0.05-0.1mm/r.
Compound and Carriage:	
Tool Post Type	4-Way
Maximum Compound Slide Travel	40mm
Maximum Cross Slide Travel	55mm
Maximum Carriage Travel	250mm
Tailstock:	
Tailstock Spindle Travel	50mm
Taper in Tailstock Spindle	MT1
Miscellaneous:	
Main DC Motor	450W
Dimension:	
Length	600mm
Width	255mm
Height	280mm
Weight	23kgs

The specifications in this manual are given as general information and are not binding. We reserves the right to effect, at any time and without prior notice, changes or alterations to parts, fitting and accessory equipment deemed necessary for any reason whatsoever.

Unpacking and connecting



INFORMATION

The lathe comes pre-assembled. When the machine is delivered, check immediately that the lathe has not been damaged during shipping and that all components are included. Also check that no fastening screws have come loose.

Extent of supply

Compare the parts supplied with the information on the packaging list.

Installation and assembly

Requirements of the installation site

Organise the work area around the lathe in accordance with local safety regulations.

Operation, maintenance and repair in the work area must not be hindered.



INFORMATION

The mains plug of the lathe must be freely accessible.

Assembly



ATTENTION!

During operation, the lathe may creep and slide slowly across the foundation. Attach the machine to the foundation.

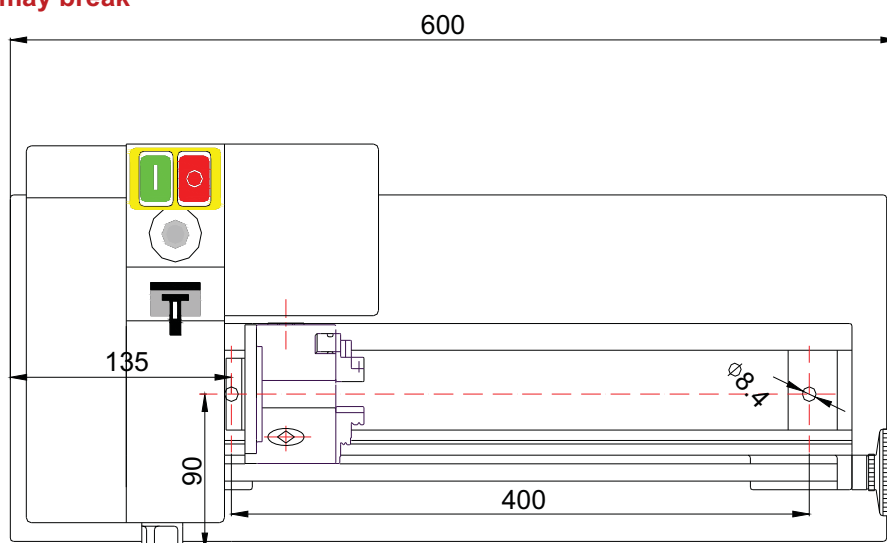
→ Secure the mounting base of the lathe to the intended foundation using the two through holes



ATTENTION!

Tighten the fastening screws on the lathe only until it is firmly secured and cannot move during operation.

If the fastening screws are too tight and the foundation is uneven, the bed of the lathe may break



Design and function

The machine is a centre lathe. It has been designed and manufactured for straight turning and facing round or regularly-formed three-, six- or twelve-square workpieces in metal, plastics or similar materials for model making.

The hollow work spindle enables you to clamp longer workpieces with a diameter of up to 10 mm.

The speed is changed progressively in the predefined speed range of the corresponding synchronous belt pulley.

The leadscrew enables longitudinal feed and thread-cutting.

When turning between centres, the tailstock is used to hold the centre and, when drilling, countersinking or reaming, to hold the tool with a drill chuck.

Construction features

- Electronic continuous speed regulation with dynamically readjusting control
- Powerful DC motor with high capacity from 120 rpm upwards
- Spindle-bearing arrangement with precision ball bearings
- Prismatic bed made from ground grey cast iron
- High concentricity precision of the work spindle $< 0.015 \text{ mm}$
- Left- and right-hand motor rotation controlled by a switch
- Turning graduated collars
- Leadscrew for thread-cutting or feed for straight turning with change gear set
- Tailstock sleeve and handwheel with adjustable precision scaling

Headstock with feed gear

The headstock houses the feed gear for adjusting the feed speeds and the reducing gear for adjusting the speed range.

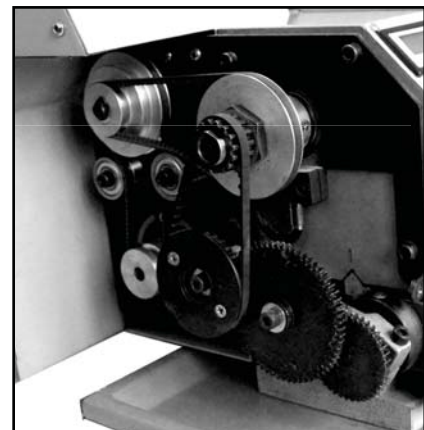
The automatic feed is activated by switching the engaging switch on the headstock.



Belt driving system and change gear

By changing the position of the synchronous belt on the synchronous belt pulleys you can select two speed ranges.

The potentiometer is used to change the speed within the corresponding speed range.



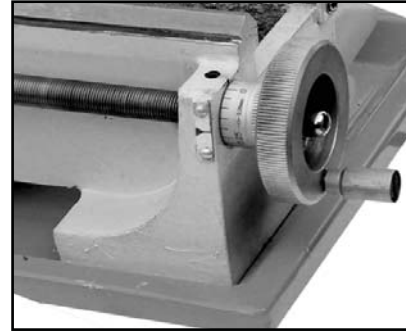
Feed gear

The feed gear is used to obtain the feeds for straight turning and threading by changing the change gears.

The travel of the lathe saddle for each revolution of the spindle, and depending on the change gears installed is shown in the table.

Lathe saddle

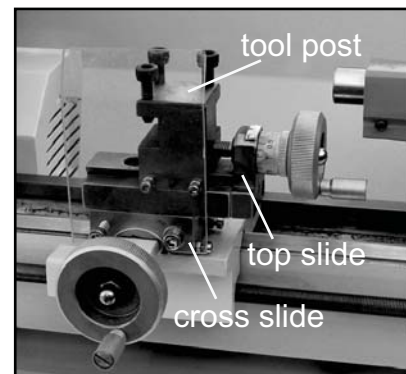
The lathe saddle (saddle slide) glides along the prismatic slideways of the lathe bed. It allows feed movement parallel to the workpiece axis. Feed motion is carried out using the crank or automatically via the feed gear through the leadscrew.



Top slide

The tools (cutting tools) are fitted to the toolholder of the top slide.

The top slide glides on a rotating swivel piece which runs on bearings on the top of the cross slide. The swivel piece is clamped with a screw.



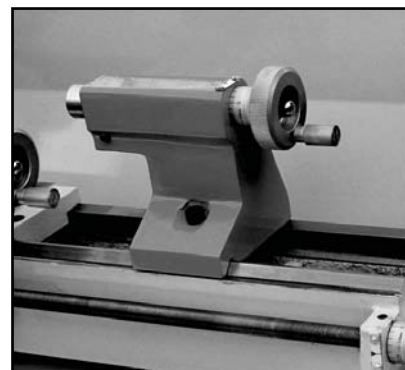
Cross slide

The cross slide is connected to the lathe saddle (saddle slide) with the help of a dovetail slide-way. Movement is at right angles to the workpiece axis by means of the cross slide.

Tailstock

The tailstock consists of a guide plate with gripping yoke and upper part. It is readjusted manually and clamped on the slideways of the lathe bed with the help of the clamping screw and the gripping yoke. The upper part houses the spindle sleeve. It has a small MK1 taper bore.

The spindle sleeve may be adjusted longitudinally via a threaded spindle. Clamping is by means of a clamping screw.



Operation

Safety

Use the lathe only under the following conditions:

- The lathe is in proper working order.
- The lathe is used as prescribed.
- The operating manual is followed.
- A workpiece is clamped in the lathe chuck, and the lathe chuck is closed.

All anomalies should be eliminated immediately. Stop the machine immediately in the event of any abnormality in operation and make sure it cannot be started up accidentally or without authorisation.



First use

Cleaning and greasing

- Remove the anticorrosive agent applied to the machine for transport and storage purposes. We recommend the use of stove distillate.



ATTENTION!

Do not use any solvents, thinners or other cleaning agents which might corrode the varnish on the machine. Follow the specifications and indications of the manufacturer of the cleaning agent.

- Lubricate all bright machine parts with non-corrosive lubricating oil.
- Lubricate the machine.  "Inspection and maintenance" on page 19

Run test

- Check smooth running of all spindles.
- Check the state of the lathe chuck and the turning jaws.

Functional test

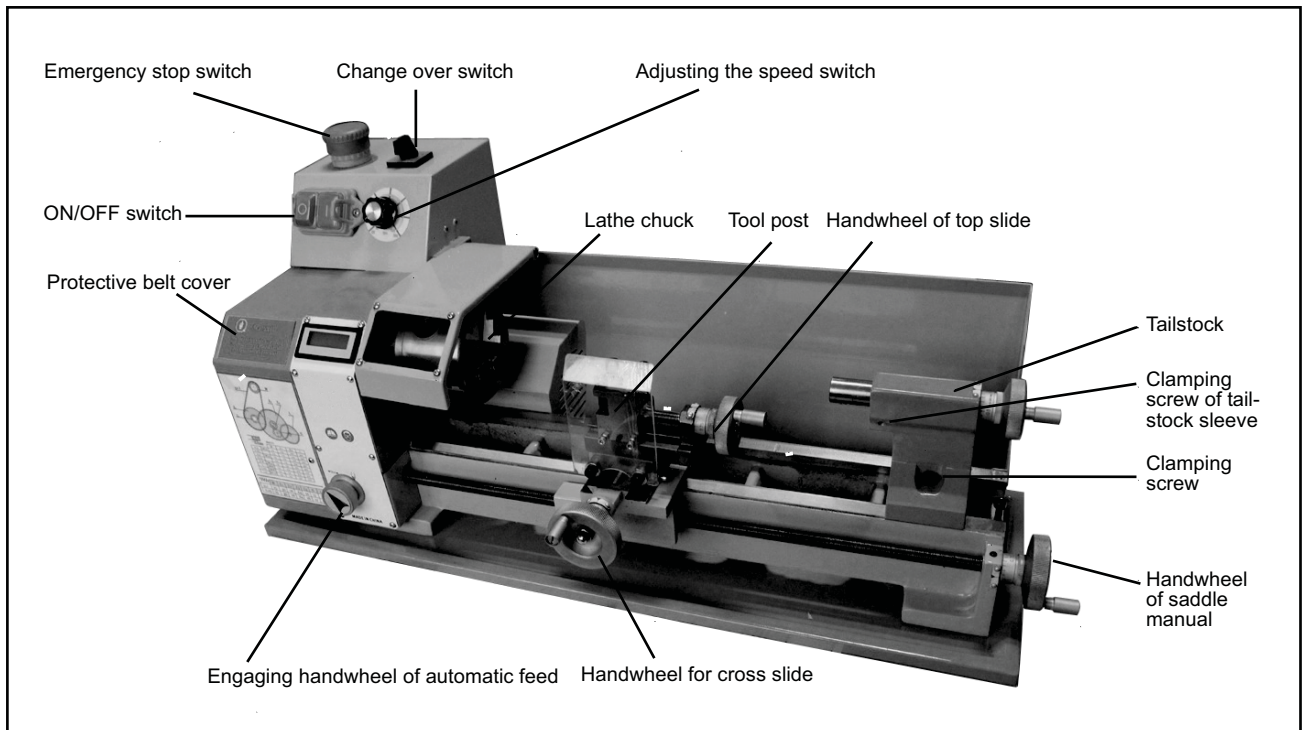
- Clamp a workpiece into the lathe chuck of the machine or close the jaws of the lathe chuck fully before turning on the machine.



WARNING!

- **Mind the maximum chuck opening.**
- **Do not stand in front of the lathe chuck when turning on the machine for the first time.**

Control and indicating elements



ON / OFF switch



ATTENTION!

Before switching on, turn the potentiometer for speed setting to a low speed setting. The electronics may be damaged if the machine is switched on at full speed setting.

The machine is switched with the ON / OFF switch. The lathe may only be switched on when the change-over switch is in the position "R" or "L".

Change-over switch

The turning direction of the lathe is determined using the change-over switch.

- "R" means right-hand rotation. The lathe chuck turns anti-clockwise.
- "L" means left-hand rotation. An example of left-hand rotation is the return movement of the lathe saddle when threading. In the "0" position, the motor is deactivated.



ATTENTION!

Wait until the machine has come to a complete halt before inverting the turning direction using the change-over switch.

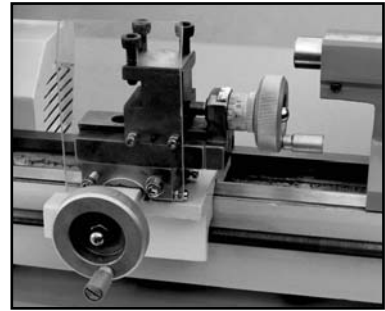
The machine is switched off during inversion of the rotating direction when in operation.

Clamping the tool

Clamp the turning tool into the toolholder.

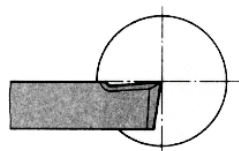
The tool must be clamped firmly and with the least possible overhang in order to absorb well and reliably the cutting force generated during the chip formation.

Adjust the height of the tool. Use the tailstock with lathe centre to adjust the tool to the required height. If necessary, use steel spacer shims under the tool to get the required height.

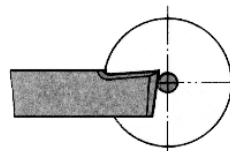


Tool height

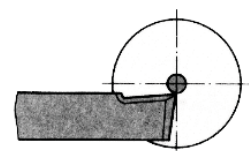
For the facing process, the cutting edge of the tool must be exactly aligned with the height of the lathe centre to obtain a shoulder-free face. The facing process is a turning operation in which the turning tool feeds perpendicular to the axis of rotation of the workpiece in order to produce a flat surface. The different methods are transversal facing, transversal slicing and longitudinal facing.



Tool adjusted to centre height



Tool adjusted above centre height



Tool adjusted below centre height

Adjusting the speed



Adjust the speed with the potentiometer.

In order to use another speed range, you must change the position of the synchronous belt on the pulleys.

WARNING!



Unplug the shockproof plug of the lathe before opening the protective cover of the headstock.

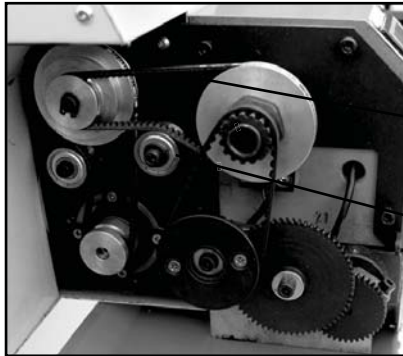
Changing the speed range

- Unplug the shockproof plug from the mains.
- Open the protective cover of the headstock.
- Loosen the Allen screw of the tensioning pulley.
- Lift the synchronous belt into the corresponding position.
- Turn the pulley by hand in order to facilitate positioning on the other pulley diameter. Make sure that the synchronous belt does not twist.
- Handle the synchronous belt with care. It must not be damaged or overstretched.
- Push the tensioning pulley upwards to tension the synchronous belt.
- Fit the tensioning pulley.
- The correct tension of the synchronous belt has been reached when you can still bend it approximately 3 mm with your index finger.

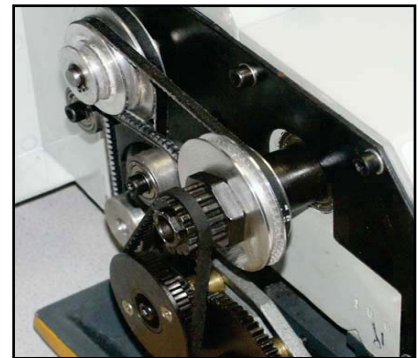


ATTENTION!

Make sure the tension of the synchronous belt is correct. Excessive or insufficient tension can cause damage.



Position of the front synchronous belt;
Speed range: 160 - 1,500 rpm

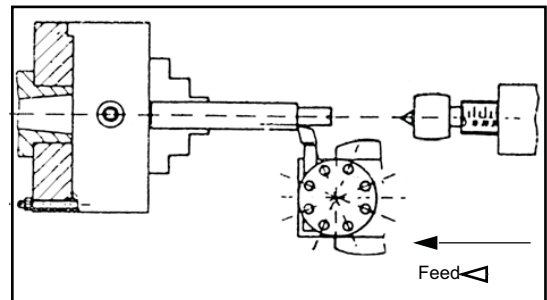


Position of the rear synchronous belt;
Speed range: 300 - 3,000 rpm

Straight turning

Manuel

In the straight turning operation, the tool feeds parallel to the axis of rotation of the workpiece. The feed can be either manual - by turning the handwheel on the lathe saddle or the top slide - or by activating the automatic feed. The crossfeed for the depth of cut is achieved using the cross slide.



Switching on the feed



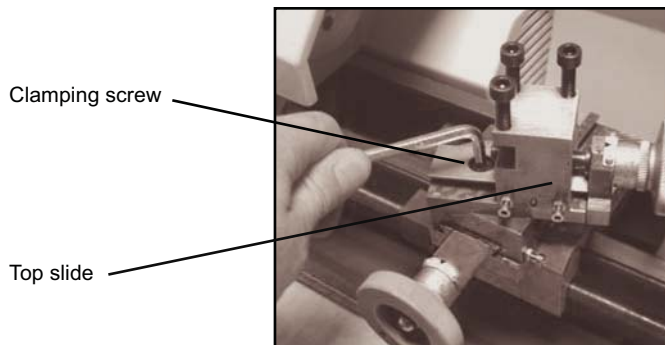
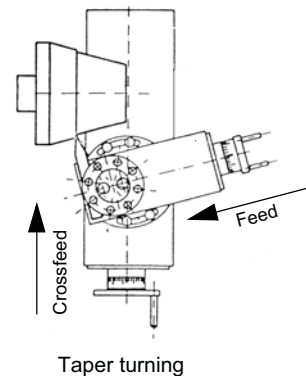
Engaging lever position automatic feed "OFF"

Engaging lever position automatic feed "ON"

Turning of short tapers with the top slide

To turn short tapers the top slide is to be adjusted according to the required angle

- Loosen the fastening screws.
- Swivel the top slide.
- Clamp the top slide again.
- Clamp the top slide.



Clamping a workpiece into the lathe chuck

When the workpiece is being clamped unprofessionally, there is a risk of injury as the workpiece may fly off or the jaws may break. The following examples do not show all possible situations of danger.

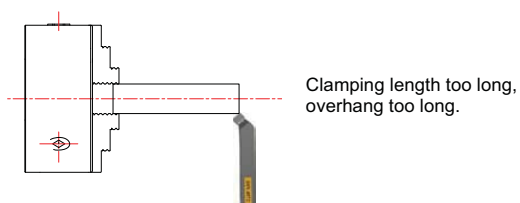
The workpieces are to be clamped safely and tightly on the lathe before starting the operation. The clamping force is to be dimensioned in a way to make sure that the workpiece is securely driven and that there are no dangers or deformations on the workpiece.



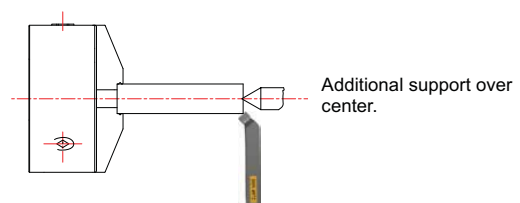
WARNING!

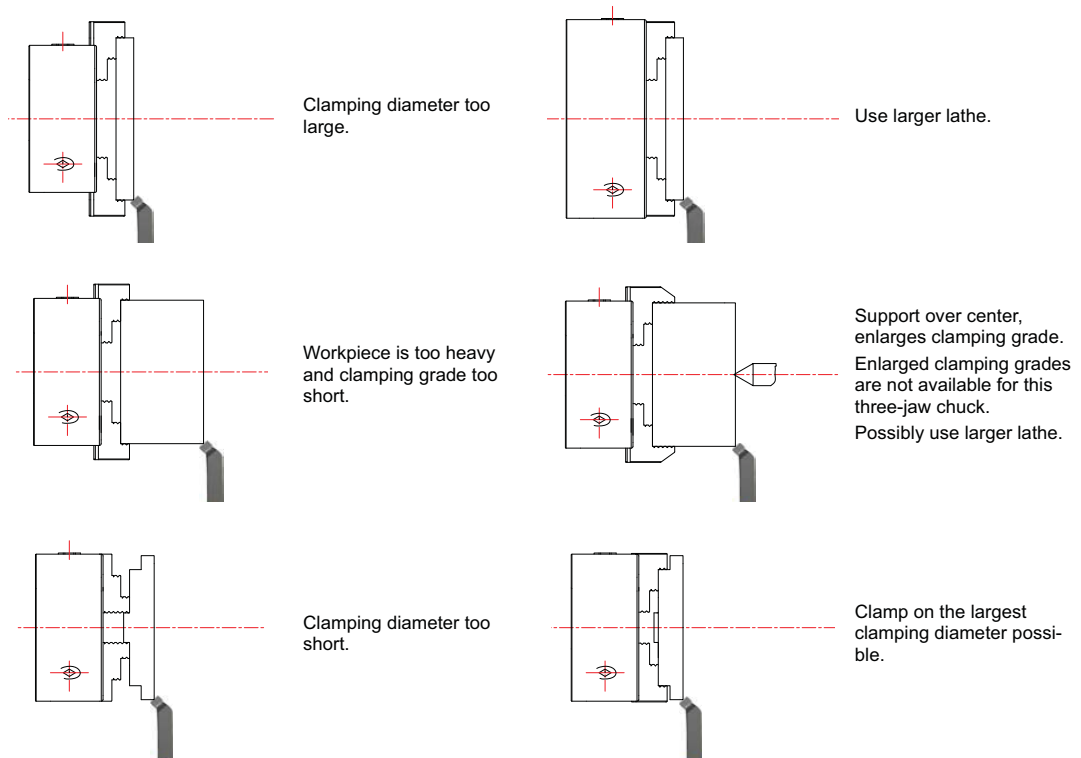
Do not clamp any workpieces that exceed the permitted chucking capacity of the lathe chuck. The clamping force of the chuck is too low if its capacity is exceeded. Also, the jaws may come loose.

incorrect



correct

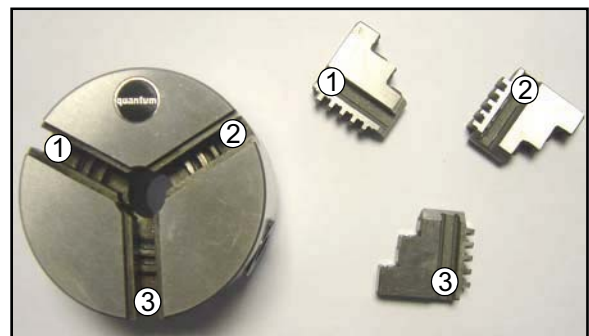




Replacing the clamping jaws on the lathe chuck

The clamping jaws and the three-jaw chuck are equipped with numbers. Insert the clamping jaws at the correct position and in the right order into the three-jaw chuck.

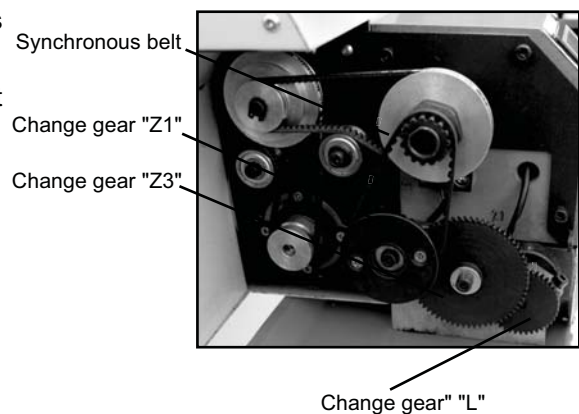
After the replacement, bring the jaws completely together in order to control if they are inserted correctly.



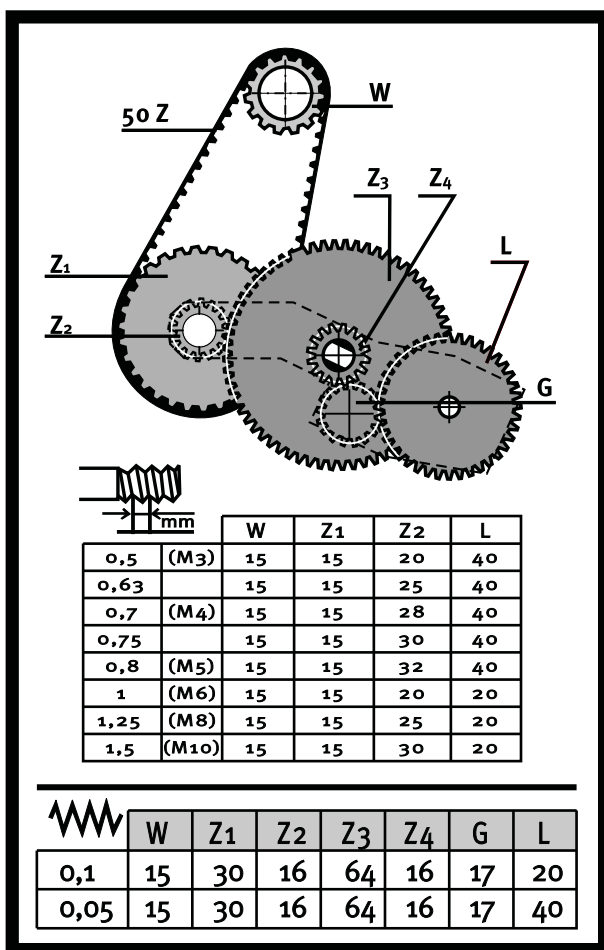
Changing feeds and thread pitches

To change the feed or obtain a certain metric thread pitch, change the change gears according to the table.

The table may also be found in the inner part of the protective cover of the headstock.



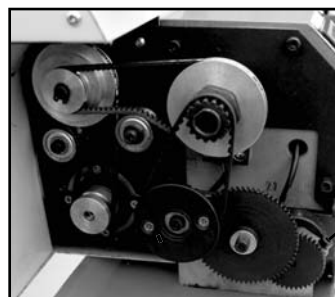
Feed table / Threading table



Changing the change gears

Example: To obtain a thread pitch of 1 mm, you have to perform the following tasks.

- Unplug the shockproof plug from the mains.
- Open the protective cover of the headstock.
- Open the clamping screw of the quadrant and remove the synchronous belt.



- Substitute the change gear "Z1 / Z2" for the change gear with the tooth combination Z1 = 15 ; Z2 = 20.
- Substitute the change gear "L" for the 20-toothed change gear.
- Push the change gear combination "Z1 / Z2" and "L" onto the quadrant together so that they can be easily turned.
- Tighten the synchronous belt and tighten the clamping screw of the quadrant.
- The correct tension of the synchronous belt has been reached when you can still bend it approximately 3 mm with your index finger.

Maintenance

Safety



WARNING!

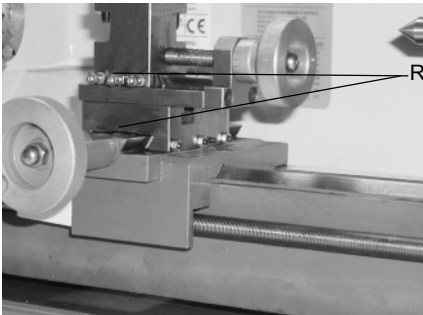
The consequences of incorrect maintenance and repair work may include:

- Very serious injury to personnel working on the lathe
- Damage to the lathe

Only qualified personnel should carry out maintenance and repair work on the lathe.

Inspection and maintenance

The type and extent of wear depends to a large extent on individual usage and service conditions. For this reason, all the intervals are only valid for the authorised conditions.

every week	Machine bed	Lubricate	• Lubricate all bright steel parts with non-corrosive lubricating oil.
	Headstock	Testing	• Check that the fastening screws of the change gears on the quadrant and the fastening screws of the synchronous belt pulleys are firmly tightened.
every month	Headstock	Grease	• Grease the leadscrew on the lubricating nipple. 
every six months		Visual inspection	• Check whether the synchronous belt has become porous and worn.
as required	Lathe saddle	Readjust	• Readjust the slideway clearance of the cross and top slide. 

Trouble Solutions

Problem	Cause / possible effects	Solution
Surface of workpiece too rough	• Tool blunt • Tool springs • Feed too high • Radius at the tool tip too small	• Resharpen tool • Clamp tool with less overhang • Reduce feed • Increase radius
Workpiece is becoming coned	• Top slide not exactly set to zero position (when turning with the top slide)	• Set top slide to exact zero position
Lathe is chattering	• Feed too high • Main bearings have clearance	• Reduce feed • Have the main bearing readjusted
Centre runs hot	• Workpiece has expanded	• Loosen tailstock centre
Tool has a short edge life	• Hard casting skin • Cutting speed too high • Crossfeed too high • Insufficient cooling	• First break casting skin • Reduce cutting speed • Lower crossfeed (smooth finish allowance not over 0.5 mm) • More coolant
Flank wear too high	• Clearance angle too small (tool "pushes") • Tool tip not adjusted to centre height	• Increase clearance angle • Correct height adjustment of the tool
Cutting edge breaks off	• Wedge angle too small (heat build-up) • Grinding crack due to wrong cooling • Excessive clearance in the spindle bearing arrangement (vibrations)	• Increase wedge angle • Cool uniformly • Have the clearance in the spindle bearing arrangement readjusted
Cut thread is wrong	• Tool is clamped incorrectly or has been started grinding the wrong way • Wrong pitch • Wrong diameter	• Adjust tool to the centre • Grind angle correctly • Adjust the right pitch • Turn the workpiece to the correct diameter

Electrical comments



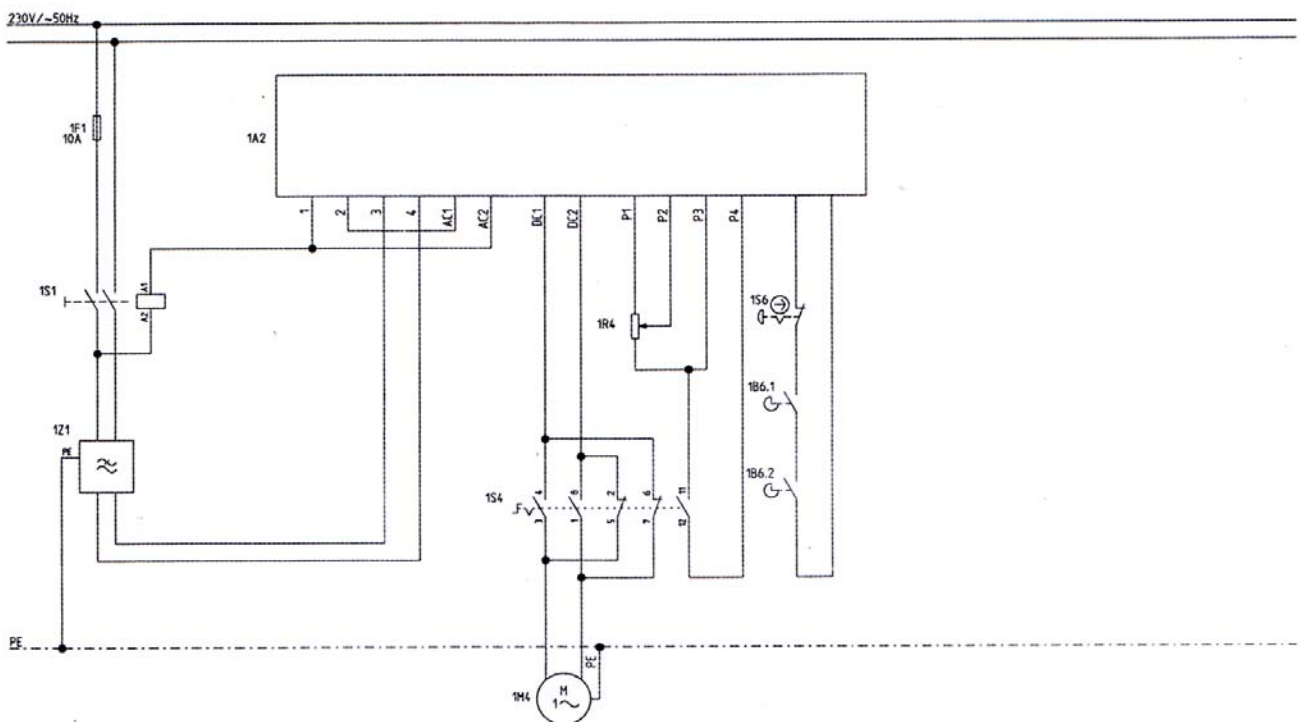
WARNING!

Connection of the lathe and all other electrical work may only be carried out by an authorized electrician!
Failure to comply may cause serious injury and damage to the machinery and property!

The lathe is rated at 450W, 1PH 220/230/240 V only. Confirm power available at the lathe's location is the same rating as the lathe. Using the wiring diagram for connecting the lathe to the main supply.

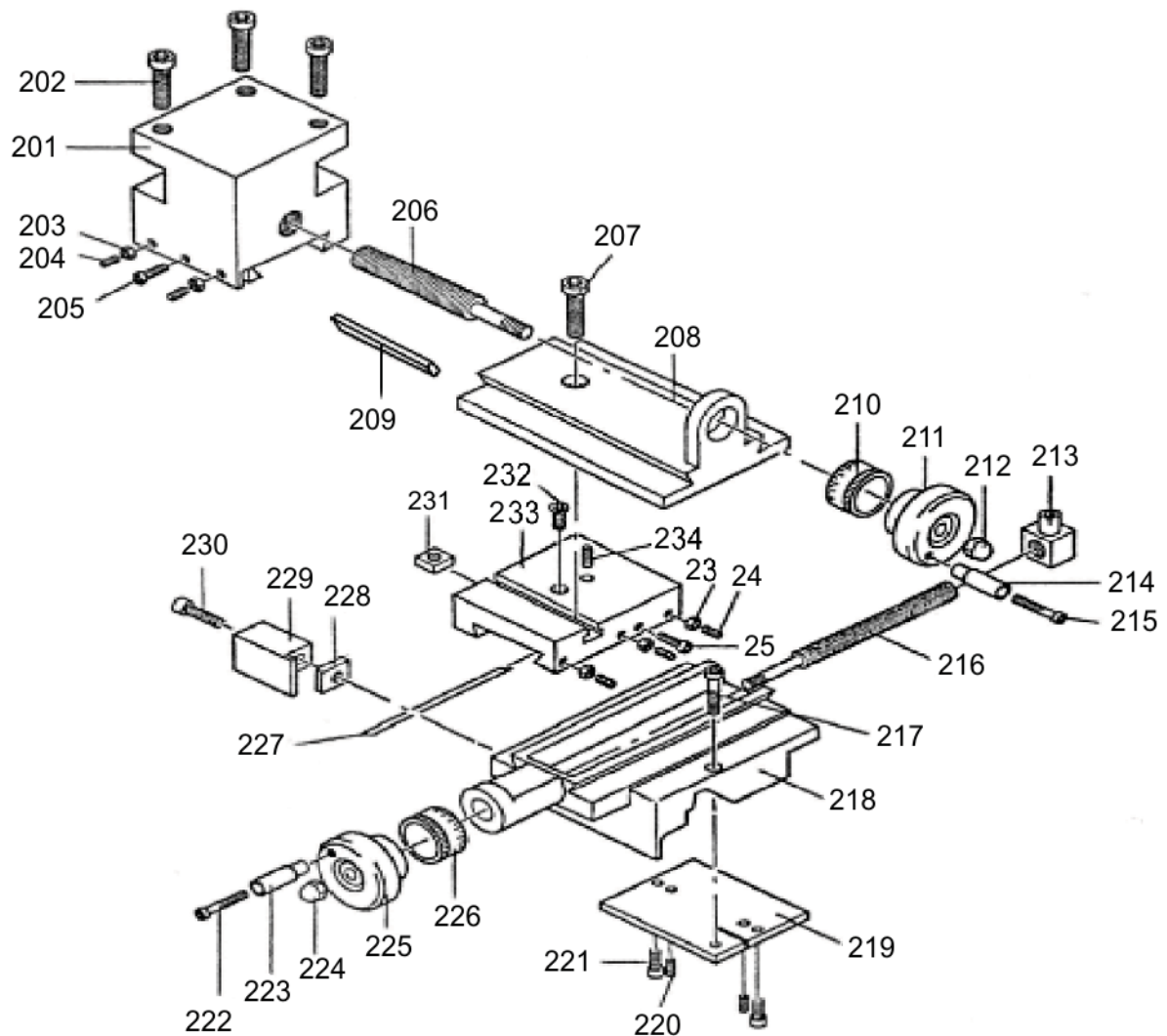
Make sure the lathe is properly grounded!

The following is wiring diagram of the lathe:



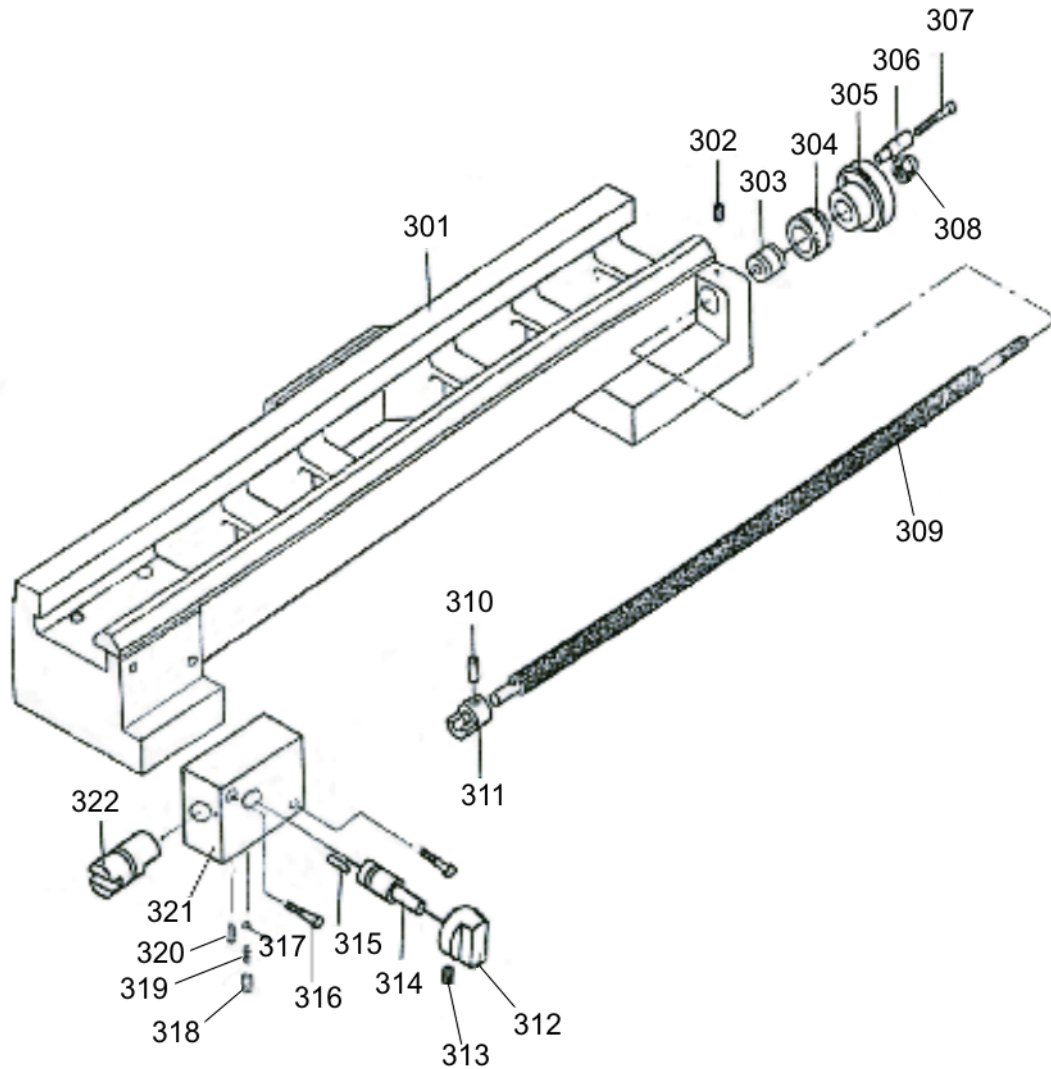
[illegible]

Spare parts drawing of lathe saddle



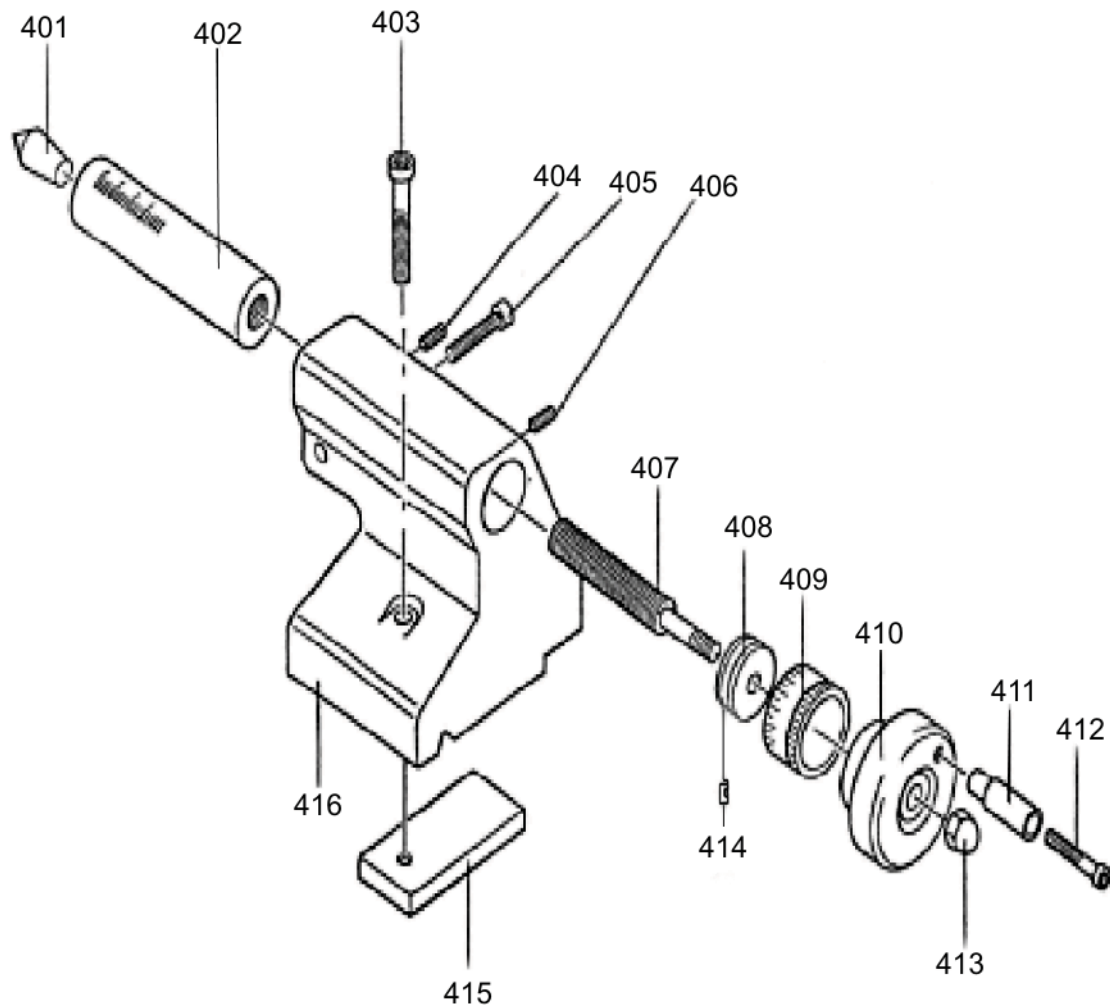
Pos.	Item No.	Designation	Pos.	Item No.	Designation	Pos.	Item No.	Designation
201	0341423	Tool rest	213	0341429	Feeding nut	225	0341411	Wheel
202	0 3420251 202	Screw	214	0 3420251 214	Handle	226	0341434	Dial
203	0 3420251 203	Nut	215	0 3420251 215	Handle knob	227	0341435	Gib
204	0 3420251 204	Screw	216	0341430	Feeding lead screw	228	0 3420251	Felt
205	0 3420251 205	Screw	217	0 3420251 217	Screw	229	0 3420251	Baffle
206	0341424	Top lead screw	218	0341431	Saddle	230	0 3420251	Screw
207	0 3420251 207	Screw	219	0341432	Lock plate	231	0 3420251	4- Side nut
208	0341425	Top slide	220	0 3420251 220	Set screw	232	0 3420251	Screw
209	0341426	Gib	221	0 3420251 221	Screw	233	0 3420251	Cross slide
210	0341427	Dial	222	0 3420251	Handle knob	234	0 3420251	Set screw
211	0341428	Wheel	223	0 3420251	Handle			
212	0 3420251 212	Cap nut	224	0341433	Cap nut			

Spare parts drawing of lathe bed



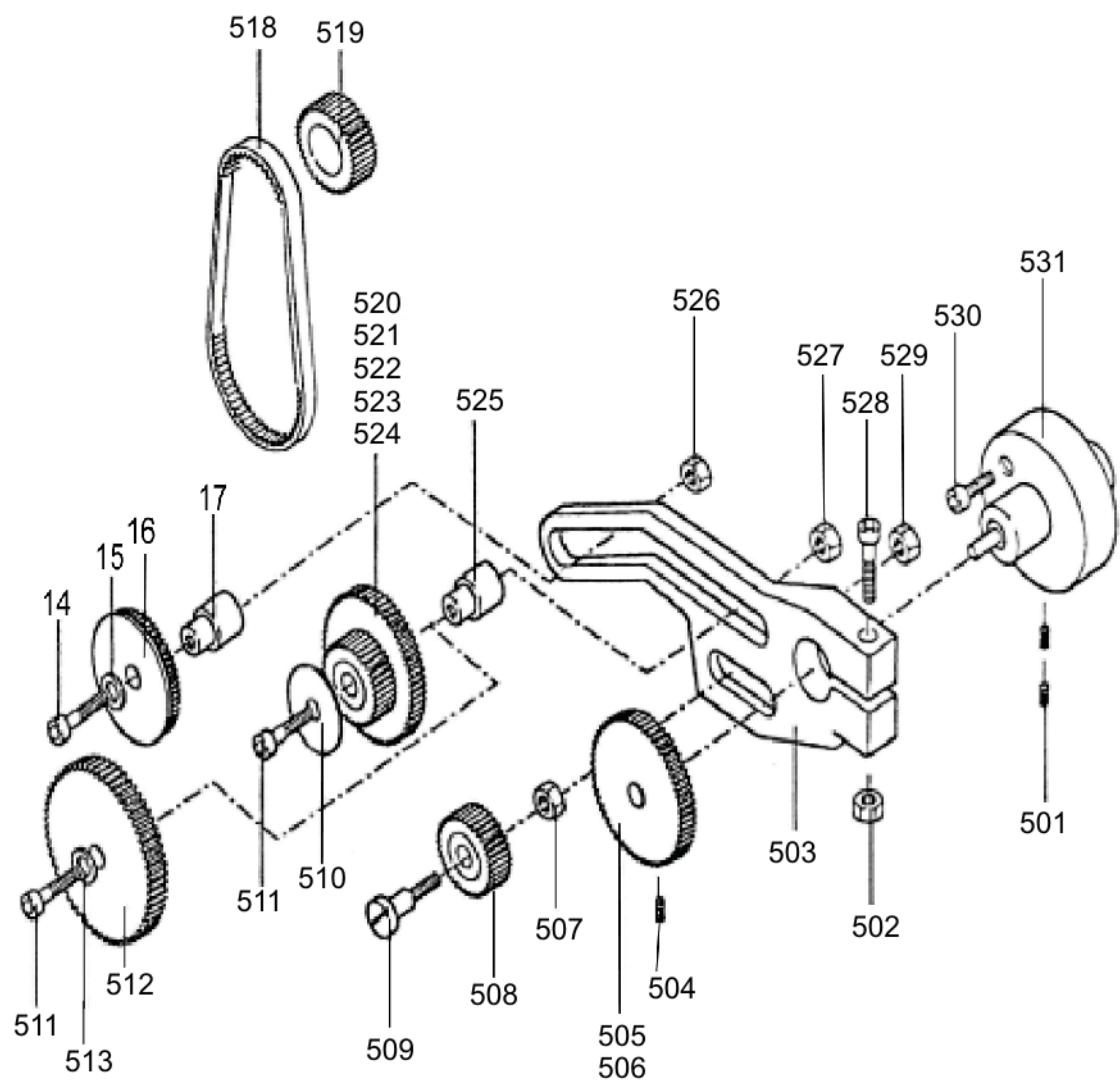
Pos.	Item No.	Designation	Pos.	Artikelnr.	Designation	Pos.	Item No.	Designation
301	0341436	Bed	312	0341442	Knob		0341404	Chip tray
302	0 3420251 302	Set screw	313	0 3420251 313	Set screw		0341405	Rear splash guard
303	0341437	Bush	314	0341443	Operation shaft			
304	0 3420251 304	Dial	315	0 3420251 315	Pin			
305	0341411	Hand wheel	316	0 3420251 316	Screw			
306	0 3420251 306	Handle	317	0 3420251 317	Steel ball			
307	0 3420251 307	Handle Knob	318	0 3420251 318	Set screw			
308	0 3420251 308	Cap nut	319	0 3420251 319	Spring			
309	0341439	Lead screw	320	0 3420251 320	Screw			
310	0341440	Pin	321	0341444	Left support			
311	0341441	Output shaft	322	0 3420251 322	Connector			

Spare parts drawing of tailstock



Pos.	Item No.	Name	Pos.	Item No.	Name	Pos.	Item No.	Name
1	MT1	Dead center	9	D140-04-07	Dial			
2	D140-04-02	Quill	10	D140-04-06	Wheel			
3	GB70 M6×35	Screw	11	D140-04-08	Handle			
4	GB70 M4×8	Set screw	12	D140-04-10	Handle knob			
5	GB70 M6×14	Screw	13	GB923 M6	Screw			
6	GB79 M4×6	Set screw	14	D140-04-09	Spring			
7	D140- 04-03	Feeding screw	15	D140-04-05	Clamping plate			
8	D140-04-04	Ring	16	D140-04-01	Tailstock body			

Spare parts drawing of changing gears



Item No.	Designation	Item No.	Designation	Item No.	Designation
401	0 3420251 401	Dead center	409	0 3420251 409	Dial
402	0341445	pinole	410	0 3420251 410	Wheel
403	0 3420251 403	Screw	411	0341428	Handle
404	0 3420251 401	Set screw	412	0 3420251 412	Handle knob
405	0 3420251 401	Screw	413	0 3420251 413	Screw
406	0 3420251 401	Set screw	414	0341449	Spring
407	0341446	Feeding screw	415	0 3420251 415	Clamping plate
408	0341447	Ring	416	0341448	Tailstock body

